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MONTHLY REPORT

CONTRACT [redacted] 25X1

PAR 226

1 May 64

SUBJECT: Analysis of Photographic Images to Evaluate System Performance

TASK/PROBLEM

1. To provide a more useful technique for evaluating photographic systems by using data obtained from microdensitometer scanned edges.

DISCUSSION

2. Edge data from Missions 1004-1 (60 edges) and 1004-2 (69 edges) were reduced; 1004-1 has the highest quality measured to date, approximately 40 percent greater than the average of previous J and C missions. Part two (1004-2) was poorer than part one and is only slightly better than the average of C and J missions.

3. The first data report on PAR 226 was issued and it contained (a) an introduction, (b) a summary sheet listing the average value, the standard deviation, and the coefficient of dispersion, (c) a listing of the description, location, and image quality rating of each edge scanned, (d) frequency plots of computer resolving power and line spread function width and (e) a grid for position identification of edges.

4. Edge data on Mission 4006 were reduced and a report will soon be issued. Mission 4006 is similar in image quality to 4003 and better than other 4000 missions.

5. Using the image quality data collected on Missions 1004-1 and -2, several comparisons were studied:

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Excluded from automatic downgrading and declassification

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a. Forward vs aft cameras (similar quality),

b. Snow covered scenes vs no snow (20 percent higher resolution and 10 percent narrower spread function width in the areas having no snow) and,

c. Effect of edge orientation on image quality (no correlation).

6. Frequency plots of line spread function width and computed resolving power for Missions 1004-1, 1004-2 and 4005 have been distributed for insertion in the "Mission Image Evaluation" handbook.

7. A system for unattended, night processing of edge trace data has been worked out for use on the IBM 1620 computer. Data from Mission 4006 was successfully reduced by this method.

8. Hardware needs are being studied that will provide punched card output from a hand-smoothed microdensitometer trace by the use of a curve follower. It appears that the equipment can be obtained as "plug in" units, either by purchase or rental. This equipment will be borrowed without cost for a period of one week.

PLANNED ACTIVITIES

9. Next period, we intend to:

a. Complete the reports on Missions 4005 and 4006.

b. Since this PAR was initiated to cover mission work for an interim period only, no further activity will be undertaken unless some specific extention of this work is directed by the Contracting Officer. Completion of the report on 4006 will conclude the present effort. Tests on future missions will be conducted under another contract as originally scheduled.